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Spray atomising device - has non-return valves and pressure chamber to which metered quantities of drug are successively presented

Patent Assignee: DMW TECHNOLOGY LTD (DMWT-N); DUNNE MILLER WESTON LTD (DUNN-N); BOEHRINGER INGELHEIM INT GMBH (BOEH ); BOEHRINGER INGELHEIM KG (BOEH ); DUNNE MILLER WESTON (DUNN-N)

Inventor: DUNNE S T; KING A W; WESTON T E; DUNNE S; WESTON T

Number of Countries: 047    Number of Patents: 039

Patent Family:

| Patent No  | Kind | Date     | Applicat No | Kind | Date     | Week        |
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Priority Applications (No Type Date): GB 9023767 A 19901101; GB 906340 A 19900321

Cited Patents: 01Jnl.Ref; EP 111875; GB 1239855; GB 2209564; SU 992070;

No-SR.Pub; EP 86144; WO 9116993

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KR LK LU MC MG MW NL NO PL RO SD SE SU US

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Div ex patent EP 521061

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| US 5662271  | A    | 19 A61M-011/00 | Cont of application WO 91GB433     |
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| SG 45171  | A1   | A61M-011/00    |                                    |
| RU 2104048  | C1   | A61M-011/00    |                                    |

Abstract (Basic): WO 9114468 A

The device comprises a piston (3) which is mounted in a cavity (2) within a body (1), and is urged by a pre-loaded spring (6) into a reduced cross-section pressure chamber (4). The piston (3) may be loaded by means of an actuating rod (31) having a handle (32), and may be latched in a loaded position by a latch (33). A liquid drug (e.g. in aqueous solution) is contained in a collapsible bag (10).

Metered quantities of the drug are successively presented in the pressure chamber (4), and then subjected to a sudden and great increase in pressure, to eject the liquid drug through an atomising head (22), to reduce it to a fine atomised spray of small mean particle size- for example, less than 30 micrometres. Non-return valves (23) and (25) control the flow of liquid through the device.

USE/ADVANTAGE - A metered dose inhaler. The sudden pressure pulse is caused by releasing the spring loaded piston (3), upon depressing an actuating button (35) connected to the latch (33). (45pp Dwg.No. ---1/8)

Abstract (Equivalent): EP 521061 B

The device comprises a piston (3) which is mounted in a cavity (2) within a body (1), and is urged by a pre-loaded spring (6) into a

reduced cross-section pressure chamber (4). The piston (3) may be loaded by means of an actuating rod (31) having a handle (32), and may be latched in a loaded position by a latch (33). A liquid drug (e.g. in aqueous solution) is contained in a collapsible bag(10).

Metered quantities of the drug are successively presented in the pressure chamber (4), and then subjected to a sudden and great increase in pressure, to eject the liquid drug through an atomising head (22), to reduce it to a fine atomised spray of small mean particle size- for example, less than 30 micrometres . Non-return valves 23) and 25) control the flow of liquid through the device.

USE/ADAVNTAGE - A metered dose inhaler. The sudden pressure pulse is caused by releasing the spring loaded piston (3), upon depressing an actuating button (35) connected to the latch (33). (45pp Dwg.No.---1/8)

Dwg.1/8

Abstract (Equivalent): GB 2256805 B

A device for dispensing a metered amount of a fluid as a spray of droplets by discharging the metered amount of the fluid under pressure through an atomising means, characterised in that the apparatus comprises: a chamber for containing a metered quantity of a fluid at a first lower pressure; an energy storage means for retaining and applying a predetermined amount of energy to the chamber so as to subject the metered quantity of fluid to a pre-determined increase in pressure from said first lower pressure to a second higher pressure of 50 bar or more so as to discharge said metered amount of fluid from said chamber; and atomising means for atomising the fluid from said chamber comprising an outlet aperture having an hydraulic diameter of 100 micrometres or less.

Dwg.1/1

Abstract (Equivalent): US 5662271 A

A device for dispensing fluid as a spray of droplets, comprising:  
a chamber for containing fluid at a first pressure;  
a piston for pressurizing and discharging the fluid in said chamber, wherein said piston is reciprocable between a loaded position and a discharge position;  
resilient biasing means for urging said piston from the loaded position to the discharge position thereby subjecting the fluid in said chamber to a predetermined increase in pressure from said first pressure to a second pressure of at least 50 bar to permit discharge of the fluid from said chamber at said second pressure, wherein said resilient biasing means is in a loaded state when said piston is in the loaded position;

latching means for holding said resilient biasing means in the loaded state;

actuating means for releasing said latching means, wherein release of said latching means releases said resilient biasing means from the loaded state and said resilient biasing means urges said piston from the loaded position to the discharge position thereby initiating discharge of the fluid from said chamber at said second pressure; and  
atomising means for atomising the fluid discharged from said chamber.

Dwg.3/8

US 5497944 A

A device for dispensing a metered quantity of fluid as a spray of droplets by discharging the metered quantity of fluid under pressure through an atomising means, comprising:

a chamber for containing said metered quantity of fluid at a first pressure;

an energy storage means for retaining and applying a predetermined amount of energy to said chamber so as to subject said metered quantity of fluid to a predetermined increase in pressure from said first pressure to a second pressure of at least 50 bar to permit discharge of said metered quantity of fluid from said chamber at said second pressure; and

atomising means for atomising said fluid discharged from said

chamber, said atomising means comprising an outlet aperture having a hydraulic diameter of 100 micrometers or less, whereby said fluid is atomized into droplets having a mean size suitable for inhalation into the lungs.

Dwg.3/8

(11) A



(19) Országkód

HU



MAGYAR  
KÖZTÁRSASÁG

MAGYAR  
SZABADALMI  
HIVATAL

## SZABADALMI LEÍRÁS

(21) A bejelentés száma: P 92 02985  
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9006340.5 1990. 03. 21. GB  
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(72) Feltalálók:

Durne, Stephen Terence, Ipswich, Suffolk (GB)  
King, Anthony Wayne, Ipswich, Suffolk (GB)  
Weston, Terence Edward, Woodbridge, Suffolk  
(GB)

(73) Szabadalmaz:

Boehringer Ingelheim International GmbH,  
Ingelheim/Rhein (DE)

(74) Képvisező:

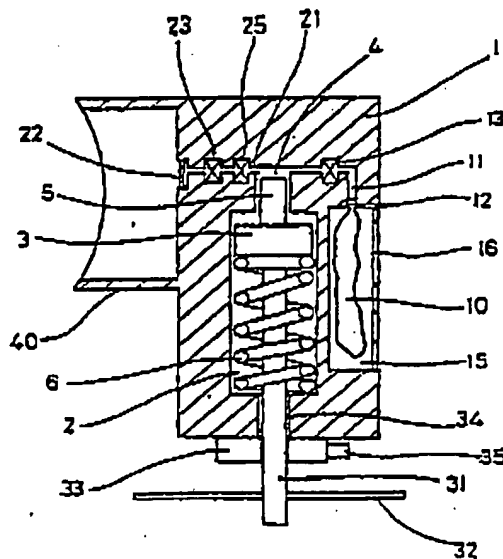
S. B. C. & K. Budapesti Nemzetközi Szabadalmi  
Iroda, Budapest

(54)

### Inhalációs készülék és eljárás porlasztásra

#### KIVONAT

A találmány tárgya inhalációs készülék, adagolt folyadékmennyiség nyomás alatti porlasztására, főleg tüdőbe juttatandó permatcseppek porlasztására egy hordozható porlasztó készülékkel, amely egy porlasztó fejet, az adagolt folyadékmennyiséget befogadó nyomkamrát, és az adagolt folyadékmennyiséget a nyomkamrába juttató valamint a folyadékmennyiségnek a nyomkamrából való kibocsátására szolgáló eszközzel, továbbá a nyomkamrához hozzárendelt energiatároló foglal magában, oly módon kialakítva, hogy a nyomkamra (4) nyomása az energiatároló útján szakaszosan változtatható és a nyomkamrához (4) egy nyomásfokozó van hozzárendelve, ahol a nyomásfokozó csatlakoztatott elemmel (35) és reteszlelemmel (33) van ellátva, és az adagolandó folyadékmennyiség folyadéktárolója (10) és a nyomkamra (4) között a folyadékmennyiséget kivezető adagoló egysége van, valamint a nyomkamrában (4) a nyomás alatt lévő és az onnan adagolt folyadékmennyiséget ki-juttató és azt széporlasztó porlasztó fejjel (22) rendelkezik. A találmányhoz tartozik egy eljárás is adagolt folyadékmennyiség porlasztására hordozható inhalációs készülékkel, főleg tüdőbe történő inhalálásra, ahol egy gyengébb hatású folyadékot egy porlasztó fejen át permatcseppek porlasztanak, és a porlasztó fejet a szájnyalás felé irányítják, és ahol a gyengébb hatású folyadékot egy előre meg-



1. ábra

A leírás terjedelme 20 oldal (ezen belül 7 lap ábra)

HU 216 121 B